

5

**ABSTRACT OF THE PREFERRED INVENTION**

The low-interference communications device uses chaotic signals which are almost periodic. A chaotic circuit driven by a sine wave signal from a function generator is produced which has narrow-band features in the power spectrum. An information signal is encoded on the 10 chaotic signal by modulating the phase of the sine wave that drives the chaotic circuit. Periodic (narrow-band) components are then removed from the chaotic signal and the chaotic signal is transmitted to a receiver device. The chaotic signal is nonlinear, so the narrow band and broad band parts of the chaotic signal have been modulated together. The transmitted signal is relatively flat, so it will not interfere with other communications signals. At the receiver, the 15 nonlinear chaotic signal is restored by performing a nonlinear operation on the received signal, such as squaring or cubing, to remove the narrowband components. Then the information modulated onto the narrow band component is detected. When this is accomplished it is possible to detect variations in the phase of the base frequency.

20